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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/577,306	05/24/2000	Bastiaan Hendrik Bakker	F3238(C)	4727

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PATENT DEPARTMENT
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EXAMINER

SORKIN, DAVID L

ART UNIT PAPER NUMBER

1723

DATE MAILED: 01/15/2003

23

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/577,306

Applicant(s)

BAKKER ET AL.

Examiner

David L. Sorkin

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 November 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 4-7, 13-16 and 20-23 is/are pending in the application.
- 4a) Of the above claim(s) 13 and 14 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 4-7, 15, 16 and 20-23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 January 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submissions filed on 24 July 2002 and 25 November 2002 have been entered.

Drawings

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the "cooling circuit" must be shown or the feature canceled from the claims. New matter must not be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Objections

3. In claim 15, "ration" apparently should read - - ratio - -.

4. Applicant is advised that should claim 20 be found allowable, claim 7 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates it is proper, after allowing one claim, to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 4-7, 15, 16 and 20-23 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

7. In claim 22, the scope of the "thread start" limitations is unclear. Specifically, it is unclear if the indicated number of thread starts represents how many thread starts the screw *comprises* or *consists of*. Claim 20 uses the term "characteri[z]ed by", which according to MPEP 2111.03 is considered to be open language, like "comprising". Claim 4 explicitly recites "comprising". However, claim 22 uses the word "having". According to MPEP 2111.03, "having" may be considered open or closed depending upon the situation. It is unclear in the instant situation whether "having" is meant in an open or closed sense. Clarification of the scope of claim 22 is required.

8. In claim 4, "comprising between 3 and 4 thread starts" is confusing because the number of thread starts must be an integer, and there is no integer between 3 and 4. Does the limitation mean - - comprising 3 thread starts - -?

9. Regarding claims 4-7, 15, 16 and 20-23, each independent claim recites "having a pitch angle defined as $\text{Arctg}(\text{Sp}/\text{Pi.De})$ ". Applicant emphasized in paper No. 17 that the parameters of the formula are not necessarily constant. The scope of the formula is therefore unclear. For example, suppose one attempts to determine a $\text{Sp}/\text{Pi.De}$ value for a screw. When one measures the pitch length between two points a full turn apart

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as instruct by the specification to determine Sp , which of the potential infinite value of De between the two points does one select for the denominator of the $Sp/Pi.De$ ratio? Likewise which flight's height (H) should be used to calculate H/wc , where wc is the spacing between two flights?

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

12. Claims 4, 7, 20 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rauwendaal (US 4,798,473) in view of Zakic (US 4,541,792). Regarding claims 20, 22 and 7, Rauwendaal ('473) discloses a single screw extruder (see col. 6, lines 15-23 and 51-53) comprising an extruding screw (10) and a barrel (33)

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characterized by between 2 and 6 thread starts (see col. 4, lines 19-21) and a pitch angle within the claimed range of 32-42 (see col. 5, lines 23-25, "20° to 40°" and Fig. 4 where specific values such as 35 degrees and 40 degrees are disclosed). Rauwendaal ('473) does not disclose a cooling circuit. Zakic ('792) teaches providing a screw extruder with a cooling circuit (see col. 1, lines 5-20). It is considered that it would have been obvious to one of ordinary skill in the art to have provided the extruder of Rauwendaal ('473) with a cooling circuit because Zakic ('792) explains that "In extruding rubber or plastic materials it is common to provided an extruder barrel with a jacket through which a heat transfer medium, usually water, is pumped" (col. 1, lines 12-15) and further explains that may be "hot or cold" (see col. 1, lines 16-18). Regarding claim 4, it is considered that col. 6, line 19-22, "This invention can be utilized in all extruder screws including multi-flighted extruder screws" would have suggest 3 or more flights to one of ordinary skill in the art. Regarding the cooling liquid being ammonia, it has been held that "Expressions relating the apparatus to contents thereof during an intended operation are of no significance in determining the patentability of the apparatus claim"⁹ *Ex parte Thilbault*, 164 USPQ 666 (Bd. App. 1969).

13. Claims 4-7, 15, 16 and 20-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rauwendaal (US 5,932,159) in view of Zakic (US 4,541,792). Regarding claims 20, 22 and 7, Rauwendaal ('159) discloses a single screw extruder (see col. 7, lines 20-26) comprising an extruding screw (28) and a barrel (18) characterized by between 2 and 6 thread starts (see col. 8, lines 6-10). A pitch range (30-90 degrees) which overlaps the claimed range is disclosed (see col. 10, lines 60-

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64). In cases where claimed ranges "overlap or lie inside ranges disclosed by the prior art a *prima facie* case of obviousness exists" (*In re Wertheim*, 191 USPQ 90 (CCPA 1976); *In re Woodruff*, 16 USPQ2d 1934 (Fed. Cir. 1990)). It is further noted that according to the instant specification, the claimed range of 32-42 degrees is not critical, but merely "preferable". Rauwendaal ('159) does not disclose a cooling circuit. Zakic ('792) teaches providing a screw extruder with a cooling circuit (see col. 1, lines 5-20). It is considered that it would have been obvious to one of ordinary skill in the art to have provided the extruder of Rauwendaal ('159) with a cooling circuit because Zakic ('792) explains that "In extruding rubber or plastic materials it is common to provided an extruder barrel with a jacket through which a heat transfer medium, usually water, is pumped" (col. 1, lines 12-15) and further explains that may be "hot or cold" (see col. 1, lines 16-18). Regarding claim 4, the screw comprises between 3 and 4 thread starts (see col. 7, lines 20-26). Regarding the cooling liquid being ammonia, it has been held that "Expressions relating the apparatus to contents thereof during an intended operation ore of no significance in determining the patentability of the apparatus claim" *Ex parte Thilbault*, supra. Regarding claims 5 and 15, Rauwendaal ('159) discloses a length to diameter ratio which overlaps the claimed ranges (see col. 10, lines 60-65). Regarding claim 6, channel width and height are recognized a variable to be optimized according to equations provided (see col. 10, lines 1-16). It is considered that it would have been obvious to one of ordinary skill in the art to have optimized these variables according to the equations provided. As held in *In re Aller*, 105 USPQ 233, "where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover

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the optimum or workable ranges by routine experimentation". Regarding claims 21 and 23, Rauwendaal ('159) discloses a single screw extruder (see col. 7, lines 20-26) comprising an extruding screw (28) and a barrel (18). A pitch range (30-90 degrees) which overlaps the claimed range is disclosed (see col. 10, lines 60-64). In cases where claimed ranges "overlap or lie inside ranges disclosed by the prior art a *prima facie* case of obviousness exists" (*In re Wertheim*, supra.; *In re Woodruff*, supra.). It is further noted that according to the instant specification, the claimed range of 32-42 degrees is not critical, but merely "preferable". Rauwendaal ('159) also discloses a length to diameter ratio which overlaps the claimed ranges (see col. 10, lines 60-65). Rauwendaal ('159) does not disclose a cooling circuit. Zakic ('792) teaches providing a screw extruder with a cooling circuit (see col. 1, lines 5-20). It is considered that it would have been obvious to one of ordinary skill in the art to have provided the extruder of Rauwendaal ('159) with a cooling circuit because Zakic ('792) explains that "In extruding rubber or plastic materials it is common to provided an extruder barrel with a jacket through which a heat transfer medium, usually water, is pumped" (col. 1, lines 12-15) and further explains that may be "hot or cold" (see col. 1, lines 16-18). Regarding claim 16, channel width and height are recognized a variable to be optimized according to equations provided (see col. 10, lines 1-16). It is considered that it would have been obvious to one of ordinary skill in the art to have optimized these variables according to the equations provided. As held in *In re Aller*, supra., "where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation".

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Response to Arguments

14. Hunchar ('209) is no longer relied upon because the claims are all limited to single screw extruders.

15. The examiner considers that a *prima facie* case of obvious exist regarding Rauwendaal ('159) based upon the decisions cited above.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David L. Sorkin whose telephone number is 703-308-1121. The examiner can normally be reached on 8:00 -5:30 Mon.-Fri..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wanda L. Walker can be reached on 703-308-0457. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.



David Sorkin

January 10, 2003



CHARLES E. COOLEY
PRIMARY EXAMINER